SUSTAINABLE COMMUNITY TRANSFORMATION

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INNOVATION

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Foreword

It is my sincere pleasure to welcome you once again to Research Update. In every issue of Research Update, we aspire to emphasise efforts by our researchers, with the hope that the dissemination of knowledge through this publication will impart valuable information, generate interests and to potentially create research opportunities and collaborations, that are impactful to the society.

In this issue, themed **"Sustainable Community Transformation"** it is our wish that it will strengthen our comprehension and enhance our appreciation of the efforts by our researchers to develop the socioeconomic well-being of the society.

Through this publication, it provides us with an excellent opportunity to highlight impactful projects that benefit our communities. The research included in this issue aspire to enhance the income of local communities in Sarawak through various initiatives such as social innovation and tourism. Additionally, by showcasing the predicaments of local communities' children with learning disabilities, we hope it would raise awareness and appreciation of our endeavours on this front.

For this, I would like to express my earnest appreciation to the researchers who contributed to this edition of Research Update. It is my wish for you to uphold your research initiatives and that the research projects expressed in this issue would encourage and stimulate interdisciplinary discussions and establish collaborations that would sustain and transform our community. Thank you.

Professor Dr Wan Hashim Wan Ibrahim
Deputy Vice Chancellor (Research & Innovation)
UNIVERSITI MALAYSIA SARAWAK

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CE (COST EFFECTIVE) CRAB HOUSE

Researchers: *Saiful Bahari Mohd Yusoff, Zalina Ibrahim and Samsur Mohamad*

Institute of Creative Arts and Technology, Universiti Malaysia Sarawak

At present, Mud Crab demand is high and Sarawak being blessed with many rivers and potentially fulfil the demand of mud crab locally. The mud crab that is from Santubong and Sematan are known to be in one of the top quality produce. In Sarawak, there are some locals who deal with mud crab farming and most of them doing a conventional mud crab farming such as pond farming. Hence, the CE-Crab House is innovated to help the lower income community to generate their income. The CE-Crab House is a cost effective crab fattening house that is newly improved design for the purpose of high volume production. The CE-Crab House is able to fatten mud crabs using a DIY design, low cost with a systematic monitoring process.

This research was supported by the Nusantara Chair Research. Grant No: I04/NRC/1632/2017

Figure 1: The CE Crab House

DEVELOPING MANPOWER REQUIREMENT PROJECTION FOR THE SARAWAK ECONOMY

Researchers: *Mohd Khairul Hisyam bin Hassan, Muhammad Asraf bin Abdullah and Audrey Liwan*

Faculty of Economics and Business, Universiti Malaysia Sarawak

Manpower are the most important management tools for growth and level in nation economic. Forecasting is defined that skills are being requirements to supply. In other word, facilitate human resources for planning and budgeting. Also be able to determine the demand for personnel in types of disciplines. Therefore, manpower requirement in Sarawak particularly in economic performance is very important for the regional planning. It is novel and very helpful in enhancing the regional or state level economic performance, which has been less given attention in the previous studies. Those studies tend to forecast the manpower requirement at the national level particularly in the main sectors or industries which is not showing the manpower requirement and economic performance of the economic regions or state level that have been introduced by the government of Malaysia. The manpower projection will give the detail information and contribution of the potential for each sector in this economy to the policymakers for the economic planning purposes. So, by looking the important of this forecasting in economic planning purposes for Sarawak economy, policymakers should attain detail information on the potential and opportunities in each of economic sector that should be emphasized. By forecasting the manpower requirement for Sarawak economy, the analysis will give policymakers more information about the contribution of each sector in Sarawak economy. In summary, the results suggest that manpower projection is very important in planning and policy information for the future development.

This research was supported by Special Short Term Grant Scheme, Malaysia Sarawak through research grant No. F01/SpSTG/1573/2017

EF (EFFICIENT FIBRE) SAGO COMPOUND FOR 3D MODELING PRODUCTS

Researchers: *Saiful Bahari Mohd Yusoff, Sinin Hamdan, Yeeni Ayu Rosita Marjani, Zalina Ibrahim and Mohamad Hariri Abdullah*

Institute of Creative Arts and Technology, Universiti Malaysia Sarawak

EF (Efficient Fibre) Sago Compound is created using sago waste to produce an environmental friendly compound that can be used for 3D modelling products. EF Sago Compound can be a substitute material to the hazardous floral foam and woods in creating 3D models products. EF Sago Compound is found to be safer material that is light, soft, durable, cheap, can be easily cut and shaped. In research context, EF Sago Compound is the first compound created using sago waste meant for modelling work. This material is found to cheaper version of modelling/product material. As well as environmental friendly material for modelling/product material. For commercial potential, this material can be used for any modeling work, able to create safer compound compared to existing materials. Variety of products and finishes will be able to be created by using the EF Sago Compound product.

This research was supported by the Kursi Tun Openg Sago Research. Grant No: I04/TOC/1517/2016

Figure 1: Sample of EF Sago Compound Material

Figure 2: Sample of Thickness for EF Sago Compound

EXPLORING NON-VISITORS' ATTITUDE TOWARDS KUBAH NATIONAL PARK'S ATTRIBUTES, ROLES AND FUNCTIONS

Researchers: *Nor Afiza Abu Bakar, Dayang Affizzah Awang Marikan and Salbiah Edman*

Faculty of Economics and Business, Universiti Malaysia Sarawak

National parks are highly valuable and vital to the ecosystems for countries around the world. In Malaysia, it forms one of the ecotourism products or sites in Malaysia. The swift development and growth of ecotourism particularly in the national parks are inspired by the increased promotion from both tourism operators and the government. Managing national parks require both visitors and non-visitors' information and their attitudes towards the importance of the park's attributes, roles and functions. Hence, the purpose of this study is to examine the importance of attributes, roles and functions of national parks in Sarawak, from the perspective of residents and non-residents in Kuching areas (non-visitors). Non-residents include of domestic and foreign tourists, who are found in Kuching at the time of data collection. For these purposes, Kubah National Park (KNP), one of the most visited national parks in Sarawak, has been selected as a case study. Non-visitors' were surveyed as they might be potential visitors in the future. Even if they will not visit the area in the future, the existence of the park would also benefit them indirectly as well as their future generations. Such indirect benefits or values are normally referred as non-use values. The non-use values refer to the values that human derived from the goods and services independent of any present or future use that people might make of those goods (Beukering et al., 2007). It usually divided between the bequest values and existence values. Face-to-face interviews involving selected respondents in Kuching areas were conducted in September to December 2018. A structured questionnaire was developed as the primary research instrument. Only respondents over 18 years of age who were willing to participate, were being interviewed. Results indicate that non-visitors have positive attitudes towards the attributes, roles and functions of KNP. The majority of participating respondents placed higher priority on the protection of the natural environment and wildlife as well as preservation of the biological diversity of the environment. The examination of how visitors and public perceive the roles and roles and functions of KNP would assist in delivering appropriate management and sustainable conservation of the area. This information is essential in understanding of the public or non-visitors' attitude and perception of KNP's attributes, roles and functions.

This research was supported by Special Grant Scheme (F01/SpGS/1557/2017) from Universiti Malaysia Sarawak.

Figure 1: Kubah National Park

FEATURE EXTRACTION ALGORITHMS OF RETINAL MICROVASCULATURE FOR COST-EFFECTIVE MEDICAL DEVICE

Researchers: *Kuryati Kipli[1], Mohammed Enamul Hoque[1], Lim Lik Thai[2] and M.M.Hamdi[3]*

[1]Department of Electrical and Electronics Engineering,
[2]Department of Ophthalmology, Faculty of Medicine and Health Sciences (FMHS),
[3]Department of Para-Clinical Sciences, Faculty of Medicine and Health Sciences (FMHS),
University Malaysia Sarawak

At present, chronic diseases such as stroke and diabetes mellitus continues to increase. In such medical conditions, if inappropriately treated, complications will easily occur such as visual morbidity, including blindness. According to the World Health Organization, as of 2010 worldwide, there are 39 million (13.6%) blind people due to visual morbidity related to chronic diseases. Therefore, this represent the magnitude of urgency needed to come up with technologies capable of preventing the unwanted complication (Mariotti, 2010). Digital image processing is one of the most remarkable advancing disciplines of computer visual image technology which is being widely employed in the modern biomedical imaging systems with increasing accuracy. This includes growing contributions of digital image processing in modern ophthalmic diagnostic systems. The human retina is the only location where blood vessels can be directly visualized non-invasively in vivo. Fundus retinal image processing has become one of the most interesting technologies in diagnosing the severe cardiovascular diseases such as diabetes, hypertension and stroke as the retinal microvasculature shares some physiological and anatomic landmarks. These includes the hard exudates, microaneurysm, cotton wool spot (CWS), and changes in the vessel diameter and bifurcation angle that are associative to the above-mentioned diseases. Widely usage of this modality, is due to its non-invasive nature, practicality and low cost of their acquisition process (Abramoff et al. 2010). Despite that, manual analysis of those retinal images is prohibitive for big scale mass screening campaigns. There are risks of bias, arise from inter-rater variability between clinicians, depending on their professional experiences, human limitation such as work fatigue and quality of the acquired images (Abramoff et al. 2010). This study aimed at developing robust and consistent retinal image analysis algorithms for the extraction of respective features of retinal microvasculature that can be integrated into the cost-effective ophthalmic diagnostic device. Additionally, an automated retinal image segmentation algorithm for the extraction of

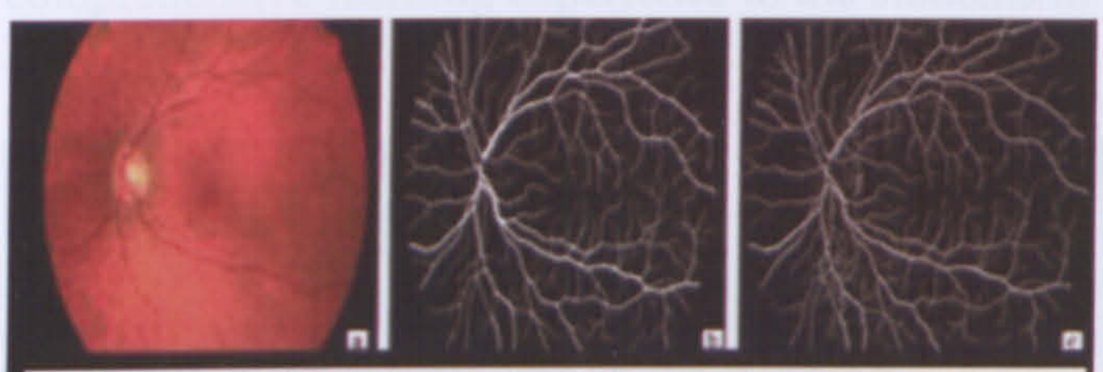


Figure 1: (a) Original image from HRFID, (b) manual segmented image and (c) resultant image of the developed segmentation algorithm.

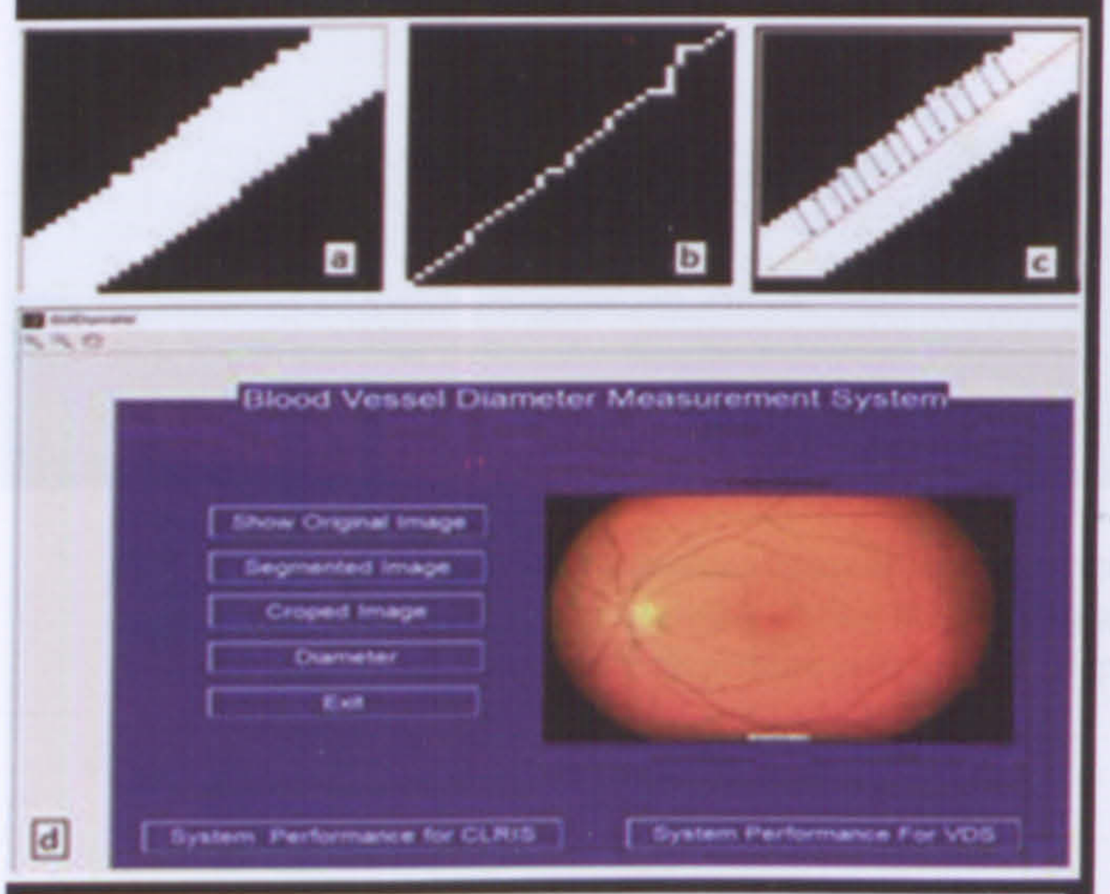


Figure 2: (a) Region of Interest (ROI), (b) Skeleton of ROI, and (c) Diameter Measurement. (d) Graphical User Interface of the Entire System.

qualitative image features of retinal microvasculature such as hard exudates, microaneurysm, CWS, was developed based on the Iterative Self-Organizing Data Analysis (ISODATA) technique. The performance of the proposed segmentation algorithm was evaluated on High-Resolution Fundus Image Database (HRFID) and obtained 94.3% accuracy with 66.5% Sensitivity and 97.86% Specificity. This ISODATA based segmentation method was employed in this research for the further assessment of the quantitative features of retinal microvasculature. In the final step of this research, a computer-assisted retinal vessel diameter measurement algorithm was developed employing the Euclidean Distance Transform technique. The performance of the retinal vessel diameter measurement algorithm was evaluated on the Vascular Disease Image Set (VDIS) and Central Light Reflex Image Set (CLRIS) of REVIEW database and obtained 98.1% accuracy for the CLRIS and 97.7% accuracy for VDIS. With further evaluation, validation and enhancement these newly developed algorithms can be integrated into the ophthalmic diagnostic tool as these algorithms obtained a good accuracy.

FOUNDATION IN SCIENCE STUDIES - BIOLOGICAL FIELD TRIP REPORT: INTRODUCTION TO DOCUMENTATION OF NEPENTHES SPECIES IN BAKO NATIONAL PARK, SARAWAK

Researchers: *Mohamad Fhaizal Mohamad Bukhori, Rohaiza Daud, Christharina Saurin Gintoron, Roberta Chaya Tawie Tingga and Raziman Iman Ghazali*

Centre for Pre-University Studies, Universiti Malaysia Sarawak

In order to accomplish the learning objectives of ecology, biodiversity and environment course, in situ activities remain the finest key to complement by conducting real fieldwork experiments. The specific objectives of the fieldwork are to ensure sustainable learning, adopting best practice in scientific documentation, and implementing holistic and integrated learning approach in the course. Therefore, related field topic was given to the students and resulted with the following attributes. Four different species of pitcher plants were identified and classified throughout the study. The recent biology educational trip to Bako National Park had documented various well-known species of Nepenthes. Information on Nepenthes species present in the parks is useful for educational and research purposes, developing a conservation plan and management and also helps in promoting ecotourism. The trip was conducted to introduce a comprehensive learning experience to the students in biodiversity-related discipline.

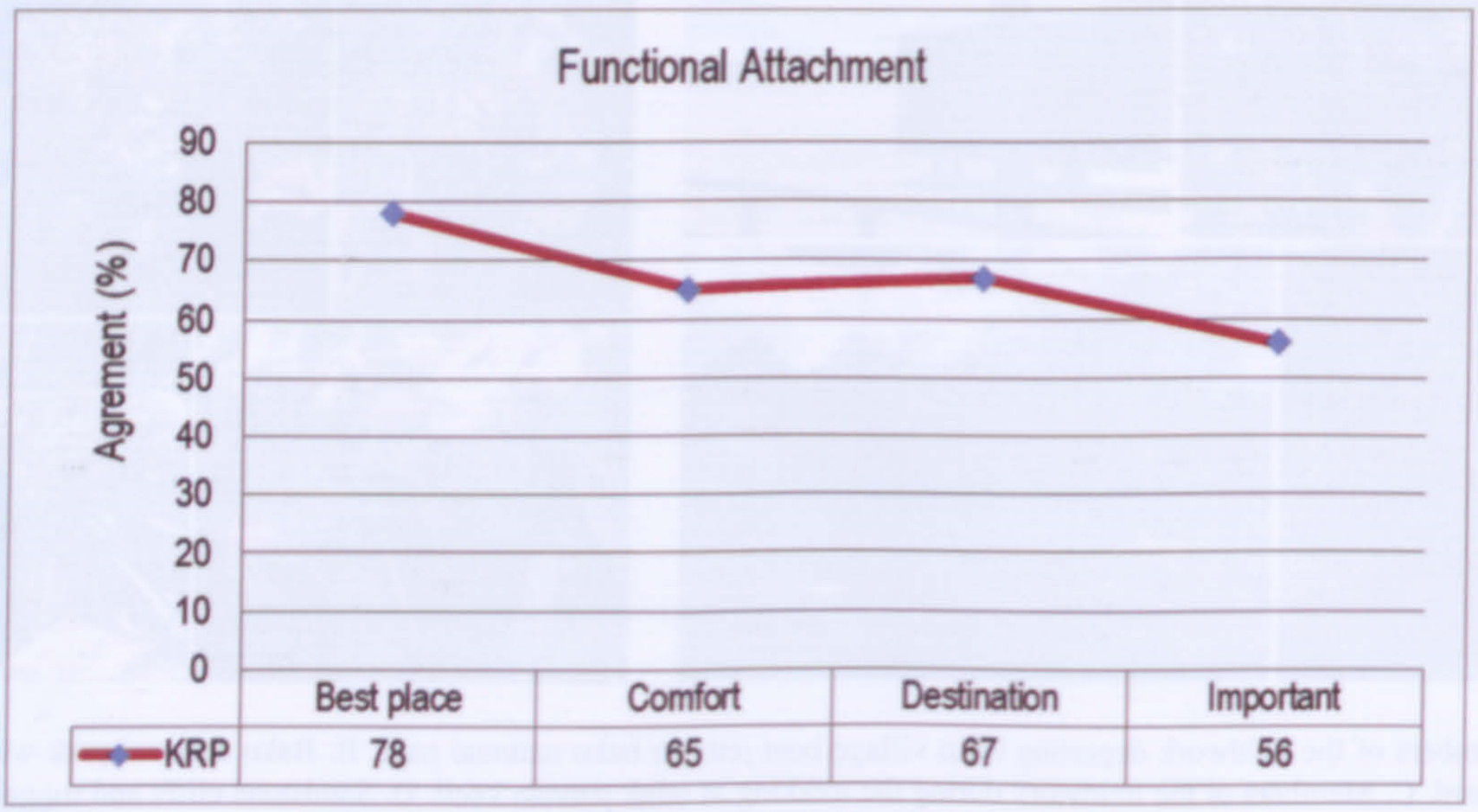
A. Members of the fieldwork departing bako village boat jetty to bako national park. B. Bako national park welcomes signboard. C. Members of the fieldwork during the trekking at teluk pandan kecil. D. Sandstone cliffs and rugged coast. E. And f. Nepenthes northiana g. Nepenthes rafflesiana h. Nepenthes ampullaria spotted at kerangas scrub vegetation.

FUNCTIONAL ATTACHMENT IN KUCHING RIVERFRONT PROMENADE, SARAWAK - MALAYSIA

Researchers: *Bambang Karsono, Atta Idrawani Zaini, Awang Hashim Awang Sulong, Siti Halipah Ibrahim and Azhaili Baharun*

Department of Architecture, Faculty of Built Environment, Universiti Malaysia Sarawak

The relationship between people and certain places can stimulate the sense of place, this process is recognized as place attachment. Place attachment also indicates the relationship between physical image and its function, through this process the sense of a place can be established. These concepts focus on the physical elements and activities together with the meanings influenced by users that will create the identity and the meaning of the place. Allowing for this issue, the research examines the functional attachment which will affect the level of attachment in Kuching Riverfront Promenade (KRP), a popular public space among local people. By using indirect method to simplify common patterns and human-specific patterns of the place, this research covers subject of place attachment. Questionnaire survey were led to a certain area of the promenade with an overall of 165 respondents and 18 stall operators were interviewed. The findings point out that the respondents have a strong association with the local environment and designate the importance of place as economics' dependence and recreational place. The level of functional attachment to KRP is between level 1 to level 4. Measuring at level 4 involves a higher commitment in loyalty, goals and obedience to the environment.



Level of functional attachment to KRP based on percentage of the response (N=165)

I- FLOAT / LOW COST AND MULTI-PURPOSE EMERGENCY FLOAT

Researchers: *Saiful Bahari Mohd Yusoff and Mohamad Hafiza Ab Razab*

Institute of Creative Arts and Technology, Universiti Malaysia Sarawak

Nowadays we hear many news of drowning cases especially during school holidays. People who go for water recreational pleasure at the beach, waterfall, pool and water sport do not usually carry around life jackets. Not everyone could afford to buy a life jacket. Life jackets are usually available only when riding water transports that are normally provided by the company. Most reasons found that life jackets are to be expensive to buy, too bulky to carry, uses too much space and others. When people go on holidays, they also consume plenty of water. Mineral or drinking bottles are often thrown away after they have finished drinking and some are not disposed properly which contributed to the pollution. Hence, i-Float is designed as an innovative floating device which can be used by anyone of all ages during water emergency. i-Float is able to keep user afloat continuously above water surface hence help users from drowning. i-Float has high commercial potential and is ready for low cost mass production. Therefore, i-Float or Low Cost and Multi-Purpose Emergency Float is created to overcome the issue. The application of waste material into life saving gadget that is lightweight and easy to assemble that makes this i-float useful and practical.

Figure 1: i- Float Product

This research was supported by the Faculty of Applied and Creative Arts (FACA), UNIMAS.

ID-MAP (INTERACTIVE DIGITAL MAP)

Researchers: *Yakup Mohd Rafee, Awangko' Hamdan Awang Arshad, Sylvester Wielding Jussem, Hishamuddin Siri, Assoc. Prof. Dr Poline Bala, Mohamad Zamhari Abol Hassan, Doris Maying, Sarah Naemah Aman Leong, Siti Zulaiha Md Yusof, Anyshya Jusam and Yu Wei Chow*

Faculty of Applied and Creative Arts, Faculty of Social Science and Humanities, Universiti Malaysia Sarawak

The invention of Interactive Digital Map (iD-MAP) is to establish, display and relay information of rural village and its dwellers to the visitors; serving as a one-stop center that delivers all the information related to the uniqueness and tourism products of the village. The establishment of a digital tourism system based on digital and interactive multimedia technology will develop and enhance the competitiveness and rapid development of rural and cultural tourism industry. At the same time, the system also is an artistic approach created for a more reliable storage, accessible record and to ease the retrieval of information for future development. Additionally, iD-MAP is a response to the unorganized and unpresentable condition of the existing visitor information board located at the entrance of Pa' Lungan in Bario. This invention is an interactive and informative digital mapping using a technology that superimposes a digitally-generated image on the user's view with the intention to provide and share required visuals and hence, providing a composite view of the displayed materials. This highly informative digital map using digital mapping and Augmented Reality (AR) to illustrate the location of local tourist attraction, available public facilities, prominent landmarks as well as the mean in locating the locality of each house in the village. The retrieval of the desired information is made possible with the usage of the smart phone equipped with the selected AR Apps. The establishment of iD-MAP based on digital and interactive multimedia technology will develop and enhance the competitiveness and rapid development of rural tourism industry. This acts also as a response towards supporting the key economic sectors within the Digital Economy initiatives by the Government of Sarawak.

This research was supported by the Fundamental Research Grant Scheme, Ministry of Higher Education (FO3/FRGS/1500/2016).

Figure 1: iD-MAP of Pa' Lungan Bario

INTRODUCTION TO PROJECT-ORIENTED PROBLEM BASED LEARNING (POPBL) IN BEHAVIOUR SCIENCE AND ACADEMIC PERFORMANCE AMONG YEAR 1 NURSING STUDENT IN UNIMAS

Researchers: *Ong Mei Fong, Greta Miranda Goh and Saloma Pawi*

Nursing Department, Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak

Project-oriented problem-based learning (POPBL) is an individual or group activity that is carried out over a period of time, resulting in a product, presentation, or performance. Studies revealed that the implementation of POPBL exposes students to experiential learning in which they can experience as well as a practice to enhance their skills (Fatmawati & Hafizoah, 2017). Currently, most nursing theory courses are often taught the traditional teacher-centred approach. This method of teaching and learning may lead to students' disinterest and lack of in-depth knowledge. A more flexible and student-centred approach such as POPBL may be an alternative. POPBL has been claimed to have numerous benefits ranging from a more motivated self-directed learner to the acquisition of lifelong learning skills in problem solving. Hence, this study aims to determine the association between the students' level of understanding toward the content and their academic performance after the implementation of POPBL. A quantitative longitudinal study was conducted among the Year 1 undergraduate nursing students in UNIMAS. A group POPBL project experimentation was conducted during Semester 1, Academic Session 2017/2018. Self-administered structured questionnaires were distributed to 65 students where a total of 64 pre-registrations and 1 post-registration student were included. The pre-assessment was carried out in the week-4 before the implementation of the project where students were briefed and given a structured teaching learning activity for the purpose of a project to be carried out. The classroom lecture, teacher and student discussion and blended learning were still remaining as the teaching learning activities, however, students were also required to submit their progress reports in the subsequent 3-4 weeks once and presenting their project outcome on the week 14. The same questionnaires were used for both in pre and post assessment to determine the students' ability to communicate and work in a team, understanding to the topic and able to provide innovative solution to the crafted problem. Findings revealed that POPBL enabled students to "work effectively as a team member" ($t:7.623$, $df:1$, $p<0.05$), promotes their "eagerness to participate in the group project or activities" ($t:7.623$, $df:1$, $p<0.05$) and "eagerness to participate in activities promotes better academic performance" ($t: 6.304$, $df:1$, $p<0.05$). The implementation of POPBL promotes their understanding in the course by enhancing their communication skills, promote knowledge and provide better solutions to crafted problems. This is supported by their achievement in the final result's grading. Most of them obtained A- and B+ in the course. Based on the high achievements of students' results, there is supportive evidence that POPBL is very much applicable to be implemented in the nursing theory courses which can be used to expose them to more problem-solving skills.

INVESTMENTS IN SOFT SKILL TRAINING IN UNIMAS: A HUMAN CAPITAL DEVELOPMENT APPROACH

Researcher: *Shafinah Rahim*

Faculty of Economics and Business, Universiti Malaysia Sarawak

Graduate development has been a key area of focus for all public universities in Malaysia since its introduction by the Ministry of Higher Learning in 2006. The concern for graduate employability recently makes the need to prepare fresh graduates with the right and sufficient social skills even pressing. The current research is exploratory in nature and an effort to weigh the cost effectiveness of the decade long investment in soft skill training by UNIMAS. To meet this objective, feedbacks from three groups of stakeholders including students, facilitators and employers were collected via surveys and interviews. Data on costs related to provision of soft skill training to first year students were retrieved from internal database. Findings show that while responses with regards to the benefits are mixed in terms of its effects, there are ways to improve the cost efficiency of the investment. Also the subjective measure of effectiveness of the delivery and assessment of the soft skill course can be enhanced by standardizing certain elements of the modules. However, given the unique nature to social skills amongst students, it requires a delicate approach combined with strong will and commitment of the management. The researcher suggests all universities to treat the offering of the soft skill course as earnestly as any other core courses at their respective faculties.

This research is supported by Universiti Malaysia Sarawak through research grant No. F01/SpSTG/1570/2017.

Figure 1: Critical & Creative Thinking applied in solving cases

Figure 2: Explore Race with different coloured theme complete tasks

LOCAL WISDOM: A REFLECTION OF CREATIVITY & INNOVATION THROUGH USUNGAN PRACTICE IN SARAWAK COASTAL COMMUNITY

Researchers: *Mohamad Faizuan Mat, Mohamad Zamhari Abolhasan, Siti Shahida Kamel and Sylvester Wielding Jussem*

Faculty of Applied & Creative Arts, University Malaysia Sarawak

The Sarawak coastal community consists of several divisions, districts and villages such as Kabong, Pusa, Spaoh, Belawai, Beladin, Maludam, Dalat and many more. A research trip has been conducted from 19-25 November 2018 in Kabong to document a rare practice by the coastal community, The marching of the Usungan. The event was held to celebrate a large group of children who completed their studies in the Al-Quran recitals. It is unique practice or tradition and it is only existing in the Borneo Island. Especially, Sarawak coastal areas continue to maintain and preserve it. Through the very interesting design of the Usungan, the Malay people of Sarawak has proven to have created their creativity and innovation. It has been stated that this practice has existed for more than 100 years ago. It is a privilege for the students or children to celebrate and, to encourage the younger generation to be successful and it is a kind of positive reinforcement for them. The Usungan also reflects the local wisdom of the people in art and design. Among the designs are aircrafts, cars, houses, mosques, boats, flowers, fishes and so on. Every design has their own story that reflects every single student who requested it. However, this practice requires the support of various parties, especially from the government, to continue and preserve it. As time goes by, some cultural heritage will be lost if no preservation effort of this practice starts from today. There are no complete and proper documentation of the design of the Usungan or any similar practice for the next generation references. Through Usungan, it shows that community knowledge in art and design in ways that can benefit the community and pass on. The event was held to celebrate a large group of children who completed their studies in the Al-Quran recitals. It is a unique practice or tradition and it only exist in the Borneo Island. Especially, Sarawak coastal areas continue to maintain and preserve it. Through the very interesting design of the Usungan, the Malay people of Sarawak has proven to have created their creativity and innovation.

This research was supported by the Nusantara Chair, Universiti Malaysia Sarawak through research grant No. 1656.

Figure 1: The March of the Usungan "Peacock Design'

Figure 2: The March of the Usungan 'Mosque'

NIEARA: GAMIFIED LITERACY APP FOR CHILDREN WITH LEARNING DISABILITIES

Researchers: *Chuah Kee Man, Radina binti Mohamad Deli and Noorhaslina Binti Senin*

Faculty of Language and Communication, Universiti Malaysia Sarawak

NieAra is a literacy mobile app that holds true to the primary purpose of promoting vocabulary acquisition for children with learning disabilities such as dyslexia. Derived from the Swahili word of "niara", which means with utmost purpose, NieAra aims to assist children in the process of recognizing letters and words formation. The application is designed and developed based on theoretical foundations of gamification and language acquisition in aiding the learners to learn words effectively beyond the "fun" factor. It uses several localised metaphors in creating suitable learning paths for learners to learn words as they complete well-designed learning missions. As they complete each mission, they are able to learn multiple sets of contextualised words. In addition, the review of previous similar games shows that limited considerations were given in incorporating a learning analytics component. In NieAra, however, parents would be able to track their child's learning through a visualized map with specific details of the child's performance in each level. For example, parents can identify which letters their child have problems recognizing. The game will then provide more options for practice with meaningful drills.

Through the gamification approach, the app contains missions for children to master specific sets of skills. Each mission focuses on specific learning content as follows:
Mission 1: Waterfont Wheelers - Matching confusing letters
Mission 2: Darul Hana Disks - Matching words and pronunciations
Mission 3: Cats Conquest - Joining words to form simple sentences
Mission 4: Merdeka Moves - Pictorial descriptions
Mission 5: Grand Finale - Writing a short paragraph

The app is in its final phase of development with more levels to be incorporated. Further evaluation is also being conducted to check on its effectiveness.

NIGHT MARKET PHENOMENA: ITS CONTRIBUTION TO THE SUSTAINABILITY OF URBAN SPACE

Researchers: *Atta Idrawani Zaini, Bambang Karsono, Nurakmal Abdullah @ Goh Tuo Ho, Awang Hashim Awang Sulong and Dona Rose Amer Koesmeri*

Department of Architecture, Faculty of Built Environment, Universiti Malaysia Sarawak

Scientists identified 3 main elements of sustainable development, namely: economic sustainability, environmental sustainability and social sustainability. No doubt that it is difficult to intertwine harmoniously the anthropocentric among social and economic objectives with the ecocentric's ecologic objectives. Likewise, sustainable development can be achieved through synthesis approach between economic, social and environment. Thus, these concepts will be the result of development which has 3 dimensions - economic, social and environmental. Each of these components has its level of priority. Given the urban context, the impact of activities either negative or positive towards the sustainability concomitantly related to consequences of development. By taking Malaysia and Thailand as a case study, this paper attempts to explore the night markets phenomena which has a positive impact on urban sustainability especially in small urban spaces. Harmonization of the economic, social and environment dimensions is continually formed after the economic recession of 1997. Economically, the night market traders can increase their incomes which derived from lower-middle economic class. Social interaction also occurs between merchants and buyers. Utilization of unused urban space as a 'venue' of night market evidently changed unused space into a place. The research was conducted in various urban areas of Malaysia and Thailand while one example of each country is discussed in this paper. This paper also delves into the issue of sustainability in the small urban space that has been developed by the urbanites to sustain their livelihood that slowly transform the unused urban space into a place.

Figure 2: Scene of Night Market at Sanehanusorn and Prachathipat Road, Hat Yai Thailand.

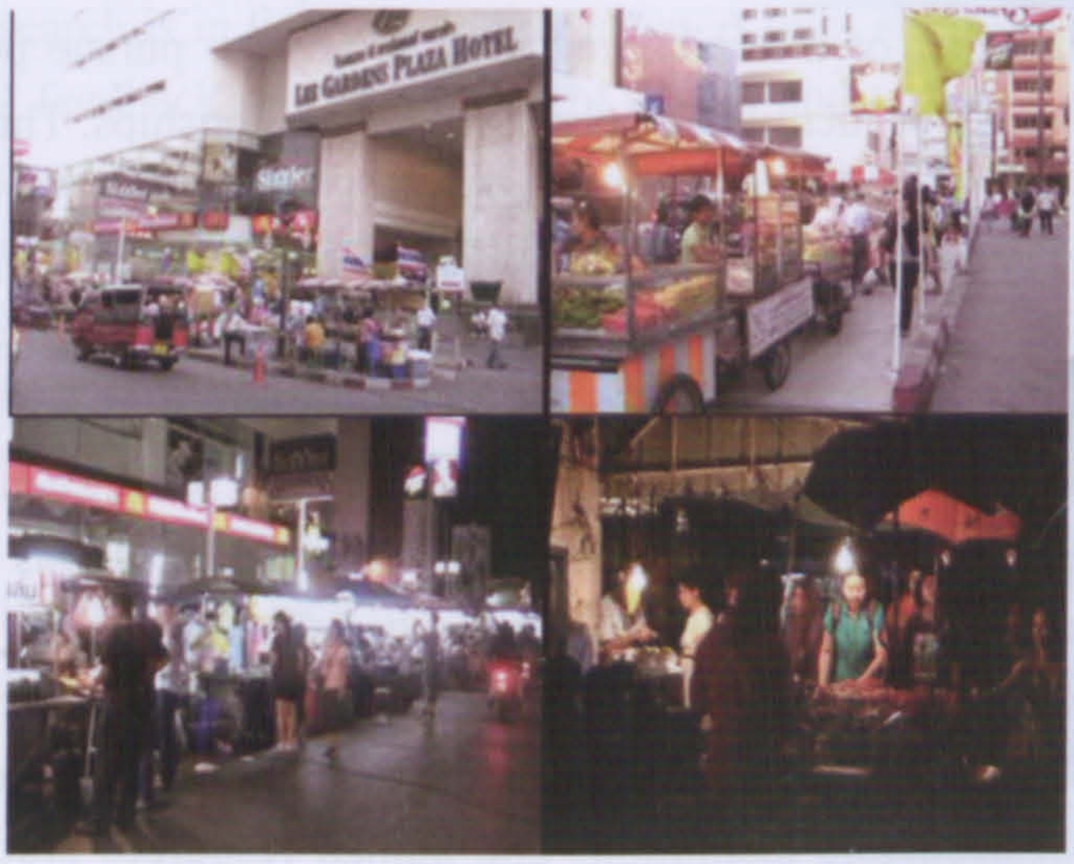


Figure 1: Scene of Night Market at Sungai Dua Road, Pulau Pinang Malaysia.

NON-WORK BEHAVIOUR AS A MEDIATOR IN THE RELATIONSHIP BETWEEN QUALITY OF WORK LIFE AND SUBJECTIVE CAREER SUCCESS

Researchers: *Nur Fatihah Abdullah Bandar, Khairuddin Idris, Farida Abdul Halim @ Alil, Surena Sabil, Nik Norsyamimi Md Nor, Helmi Sumilan and Ling Nyuk Ping*

Faculty of Cognitive Sciences and Human Development, Universiti Malaysia Sarawak

Universities are organisations which generate scientific knowledge in contributions to the development of society. University performance is important to be the evaluation on the level of economic development in a country. It is also the ability for the citizens to compete in the global economy which can affect the productivity of the country. Thus, it is necessary to maintain and improve the levels of the quality of work life (QWL) so that academicians serving as the bedrocks of every academic institution are able to exhibit high performance. As a result, this may increase the sustainable economic development. In the case of Malaysia, married academicians often face work and family life conflict due to their multiple roles (Achour, Mohd Yusoff, & Mohd Nor, 2013). It is difficult for married academicians to balance work demands with personal and family responsibilities when they are overloaded with office work and household work and faced spouse-related issues. It becomes even more challenging where they have children. They also face these conflicts when they perceive poor working conditions such as inflexible work schedules and long working hours (Achour et al., 2013). Therefore, the management of academic institutions should introduce specific measures and initiatives to improve the QWL of married academicians in order to assist them to achieve work-life balance and their commitment besides attaining organisational objectives in an effective manner. While previous studies have examined QWL and subjective career success, there is a research gap examining how non work orientation affects the relationship with QWL and subjective career success. Non work behaviour define as an experiences in different spheres of life (e.g., having a career, being a member of a family, engaging in time to pursue personal interests, or community service). This study sought to identify and clarify these relationships. This study examined the relationship between the quality of work life (QWL) and subjective career success through the mediating effect of non-work behaviour (Community, family and personal life). Self-administered surveys were used to collect data from 200 married academicians in selected Public Institutions of Higher Learning in Sarawak. Data was analysed using Analysis of Moment Structures (AMOS) for Structural Equation Modelling (SEM). Results indicated that there were positive significant effects between QWL, non-work orientation, and career success. A partial mediation effect of non-work behaviour was established on the relationship between the QWL and career success. The findings implied that one way to increase the subjective career success of employees is through the provision of flexible policies that allow employees to participate in community work, attend to family matters and time off for personal development. These results will be important to the management of academic institutions and human resources practitioners who are interested in enhancing the career success of married academicians.

This research was supported by the Research Acculturation Collaborative Effort (RACE) Grant Scheme, Ministry of Education Malaysia through research grant Grant No: RACE/e(1)/1248/2015(04)

PERFORMANCE APPRAISAL: DECISIONS, FEEDBACK AND FUTURE DEVELOPMENTS

Researchers: *Siti Mariam bt Abdullah, Rusli bin Ahmad, Nur Fatihah bt Abdullah Bandar, Ahmad Sofian Shminan and Helmi Sumilan*

Faculty of Cognitive Sciences and Human Development, Universiti Malaysia Sarawak

Employee performance appraisal is a consistent subject of great interest in any organisation. A quick online query will return hundreds of millions sources of information. It adds to the interest when all employees, from top management to the lowest paid have a personal stake in the working of the performance appraisal system as they are all evaluated by others and most of them evaluate others, if not all as in 360-degree performance appraisal. Hence the research project entitled Performance Appraisal: Decisions, Feedback and Future Developments is an effort of a small team of researchers to explore and obtain more insights into the far-reaching subject of performance appraisal (PA), in general and the performance appraisal system, currently utilised in public universities in Malaysia, specifically. The outcomes of the research study will provide a better understanding of the current PA system and the general acceptance from those directly involved in the system, to all major stakeholders in higher education: policy makers in the Ministry of Higher Education, top management in public universities, evaluators and evaluatees with direct experience as `end-users' of the system, leading to a more efficient and effective decision making in the conduct of performance appraisal. The population for this study consists of all the lecturers in three public universities in East Malaysia: Universiti Teknologi MARA (UiTM), Universiti Malaysia Sabah (UMS) and Universiti Malaysia Sarawak (UNIMAS), numbering about 2,000 academic staff members in total. Employing mainly a survey approach, a bilingual questionnaire was designed to be administered on a drop-pick arrangement with the universities and an online survey form to reach more respondents. Additional information to substantiate the findings from the survey will be obtained through several focused interview groups, selected from the sampling. Currently, the research is in the pilot testing stage. A pilot study was conducted among lecturers in UNIMAS to get initial feedback on the instrument design and to test the validity, reliability and administrability of the questionnaire. The pilot study results is in the process of analysis and will be used for further revision of the instrument and the research procedure, if necessary. Once completed, the survey will be conducted in the three public universities and the findings are expected to be finalised around mid 2019. Interestingly, one of the tangible outcomes of this research study is the Performance Appraisal Intervention Kit (PAI-KIT). PAI-KIT consists of the SWOT instrument (resembling the survey questionnaire which can be tailored to the needs and the current performance appraisal system in a particular organisation), data analysis and evaluation report as well recommendations for intervention. Thus PAI-KIT is a complete intervention strategy to address the issues or to prevent issues, as the case may be, in each organisation based on its context. Besides, it is collaboration between academics and interested organisations to contribute what we do best; both theory and practice. The proposal of PAI-KIT was given a merit mention during InTEX18 Expo held concurrently with InTEX conference organised by UNIMAS in Pullman Hotel, Kuching last year.

PREDICTING FINANCIAL SUSTAINABILITY IN CHARITIES IN THE MALAYSIAN ENVIRONMENT

Researchers: *Sharon Cheuk, Esmie Obrin Nichol, Michael Tinggi and Salawati Sahari*

Faculty of Economics and Business, Universiti Malaysia Sarawak

Charity failure has been a problem that has plagued developed countries; it has been attributed to the poor economy and the resulting fall in donation levels, lack of funding, increased competition for funding, lack of administrative capacity, lack of risk management, inadequate resource planning and development, inadequate fiscal controls, failure to set and adhere to best practices, policies, procedures and standards, and theft and embezzlement, amongst others. A good number of governance failures have been noted amongst charities in the Asian region. From the financial perspective, we view charity failure as an impairment of financial sustainability, or financial vulnerability; hence by inference, we propose to investigate accountability, board tenure diversity, revenue diversification, own income generation and financial management capacity as possible factors in predicting financial vulnerability in charities. Lack of sufficient study has been made in this area, hence originality is considered high. The study utilises a panel data regression method to test the hypotheses of the research. The framework proposed is expected to better predict financial sustainability using specific indicators in the Malaysian charity environment and the confirmed and tested model is envisaged to be a precursor for a charity financial sustainability index that can be used to rate/rank charities as well as other non-profit organisations. Such an index can in turn be utilised for deciding on: allocation of government funding, extension of financing by financial institutions, and financial support provision by donors.

RECOGNIZING LEVEL OF ATTACHMENT IN MALACCA RIVERFRONT PROMENADE

Researchers: *Nurakmal Abdullah @ Goh Tuo Ho, Bambang Karsono, Dona Rose Amer Koesmeri, Zayn Al-Abideen Gregory and Yon Syafni Samat*

Department of Architecture, Faculty of Built Environment, Universiti Malaysia Sarawak

The present city development tends to be disintegrating and decreasing the quality of its attachment and meaning. It is important to recognize the level of place attachment in existing locality, to understanding the significance of place attachment in influencing the identities. This paper intends to determine the importance of level of functional and emotional attachment in Malacca Riverfront Promenade (MRP) from users who involved in it. Score average 2.70 as result of functional attachment and score average 2.48 of emotional attachment measurement, indicate that respondents have strong level of attachment to the functional and emotional of open space and streets in MRP. Most of the respondents consider that they feel more attached to MRP caused by the significance of MRP for their life. Attachment emerged from the role of MRP as an environment to determine the reason of respondent to attached and gain the experience in MRP.

Figure 1: Malacca Riverfront Promenade: a popular urban space among the locals in Malaysia

REDESIGNING NUSANTARA ORAL NARRATIVES TO CHARACTER DESIGN: NEW POTENTIAL PROCESS APPLICATION IN A TRADING CARD GAME MODEL

Researchers: *Ahmad Azaini bin Abdul Manaf and Fytullah bin Hamzah*

Faculty of Applied and Creative Arts, Universiti Malaysia Sarawak

This research is to establish the process of designing oral Nusantara folklores characters. The applied creative process adapting Trading Card Game Model by Miller (2011) commonly used as a playable trading cards among enthusiast and collector. The Nusantara characters selected in this study were found potentials to translate into final cards, modified and redesign characters based on commercial requirements. The adaptation of selected folklores "Barongan" Character design selected among many potential characters from Nusantara, Javanese, Singapore, Thailand and Malaysia, shared the same concept. The process of creation the character in the trading cards using DACIDFM (Design>Analysis>ConceptTextual>Defining>Ideation>Media) is an efficient creative process that is potential to enforce towards animation concept industries. These practices accelerate the product outcome, compared the conventional processes that were known strictly bound to the content scope, which cause lengthy process in game and animation studios. The method established to be efficient and economical with multiple and various complicated characters were created apart from "Barongan" with the same manner, in other hand preserved the character originality and yet, appealing to the current market requirement. By adopting the process, the Trading Card Game Model and its applications, currently practiced at Kromosom Sdn. Bhd. an animation studio in Kuala Lumpur. The suggested method on the other hand, not only beneficial to animation and game industry at large, but to the character design itself; has wide potential for Intellectual property in the toy industry, at the same time promoting traditional elements within the textual accuracy.

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Figure 1: Original visual references

Figure 2: Proposed modernization of commercial characters for trading cards using DACIDFM method

SLEEP STATUS AND ITS ASSOCIATION ON OCCUPATIONAL PERFORMANCE AMONG NURSES

Researchers: *Saloma Pawi; Laurita Estiny and Ong Mei Fong*

Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak

Sleep is an activity that allows our body to have enough rest after many hours of working throughout the whole day. Only through sleep do our brain and muscles are able to relax. Sleep expert says the amount of sleep each person need is largely dependent on the individual. Compared to non-shift workers or day workers, shift workers are more prone to experience sleep disorders simply due to the non-standard working time. Many studies have reported that these sleep disorders tend to affect the occupational performance of an individual. Among possible consequences include increase mortality, morbidity, accidents and errors, absenteeism in workplace, decrease in productivity, and deterioration of personal and professional relationship problems caused by working in shifts are not uniform among shift workers, and some suffer while others thrive. Shift workers on a night shift (hereafter night shift workers) slept less than the shift workers on a day shift (hereafter day shift workers) or day workers did, whereas the working hour for night shift workers were longer (Son, Kong, Koh, Kim & Harma, 2008). Data inclusive of demographic variables, measurement of sleep status and occupational impact was collected from 213 nurses working in 10 selected wards in Sarawak General Hospital in 2017. Findings revealed that out of 213 nurses, 53.1% reported of being moderately sleepy while 12.2% are very sleepy while working. Reporting on the association of sleep status with occupational performance, 55.4% reported of slight impact, 41.3% reported of moderate impact and another 3.3% reported of high impact. In this study, the relationship between demographic variables and the prevalence of sleep status was also investigated. Working area (ward/unit) is significantly associated with the prevalence of sleep status (p-value of 0.000). In conclusion, more than half of the respondents in this study reported of being sleepy while working thus pose great danger to patients under their care as this can affect their occupational performance. Further research need to be done to include on emotional status and physical fitness of respondents as this may affect their ability to cope with shift work and thus determining sleep disorder.

SMART PARKING SYSTEM (SPARKS)

Researchers: *Mohd Uzairi Bin Ahmad Hajazi, Hamrila Binti Abdul Latip and Siti Aisyah Binti Ya'kob*

Faculty of Economics and Business, Universiti Malaysia Sarawak

Public parking facilities is a crucial component of transportation system as it provides site accessibility to other public areas and facilities such as banks, shops, restaurants and other activity centers. Even more so in Malaysia, where an efficient public transportation system is lacking, thus making usage of private vehicle a necessity in reaching destinations. Issues relating to parking facilities therefore is a matter of public importance, not only due to its importance to transportation system, but also its wider implication towards land use and economic development. With the number of private vehicles continue to grow, it is expected that issues such as insufficient parking spaces among others, will become worse in the future. In addition, through interviews with parking operator and observation, it is found that the current operation is heavily reliant on manual processes, especially during vehicle parking inspection and back-end operation (data entry etc.). Furthermore, inconveniences during parking and notice payment process is also one of major factor that leads towards public dissatisfaction. Therefore, the concept of Smart Parking System (SPARKS) is proposed, with the aim to improve the operation and public satisfaction of public parking facilities. SPARKS is a comprehensive digital platform in managing public parking facilities, utilize RFID technology and comprise of parking management dashboard, digital scanning devices, digital parking payment system and smartphones application. By utilizing digital platform in the operation, it will reduce labour-intensive tasks and provide real-time monitoring of operation. In addition to that, via smartphones application, it will provide a user-friendly parking payment system that support digital payment methods, thus providing convenience to user. The elimination of parking coupon meanwhile promotes sustainable environment. The potential of SPARKS can be further enhanced as it can also be used as vehicle identification system by other authorities.

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SMART SEATER

Researchers: *Saiful Bahari Mohd Yusoff and Zalina Ibrahim*

Institute of Creative Arts and Technology, Universiti Malaysia Sarawak

Smart storage and minimal space have become popular due to the increase in selling / renting price for residential and buildings. People seek for furnishing and fittings that can save plenty of space, functional and value for money. Therefore, Smart Seater product is created to fulfill the needs for functional chair that uses minimal space and has smart storage feature. Smart Seater is a multipurpose seater with a smart design created for users wishing to sit on the floor with a proper back support. Smart Seater can be assembled and dissembled easily and quickly with additional feature of smart storage. Smart Seater can be used by everyone and the design of this smart seater can be applied using different materials and finishing.

This research was supported by the Institute of Creative Arts and Technology (i-Create), UNIMAS

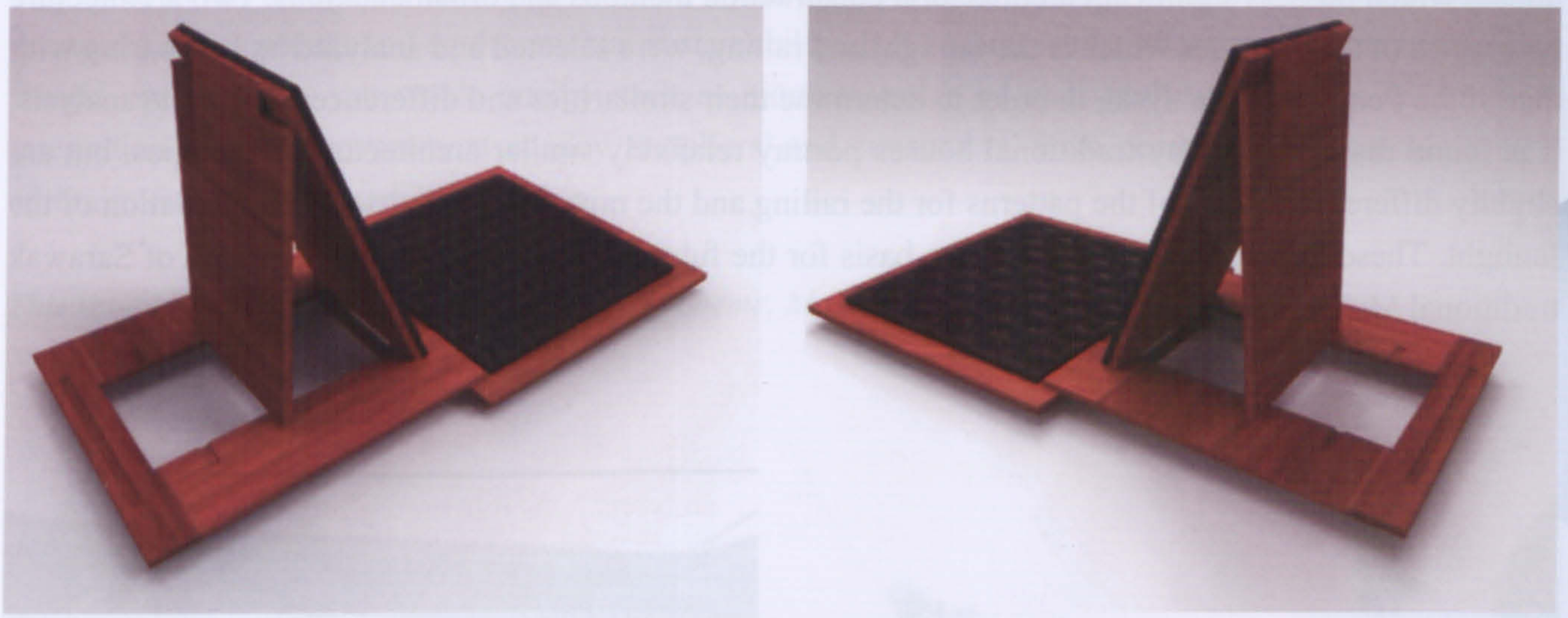

Figure 1: Smart Seater

TRADITIONAL DWELLINGS ARCHITECTURE TYPOLOGY: RESETTLEMENT OF THE MALAY VILLAGES IN BORNEO, MALAYSIA

Researchers: *Yon Syafni Samat, NurAkmal Goh Abdullah, Afzan Ahmad Zaini, Awang Hasim Awang Sulong, Zayn Al-Abideen Gregory, Bambang Karsono, Dona Rose Amer Koesmeri and Atta Idrawani Zaini*

Department of Architecture, Faculty of Built Environment, Universiti Malaysia Sarawak

In recent days, demolition of old buildings in expense of new development is nothing new, especially in the city of Kuching as a large number of old buildings with local heritage values have been recklessly torn down. Some of these buildings held high historical significance and contributed to the character of the city, yet they were not being properly researched, recorded and documented before the eradication. Thus, this study intended to investigate the distinctiveness of the traditional Malay dwellings of Sarawak in 12 traditional villages that are on the verge of being demolished and resettled to a new residential development. The initial stage of the research was done by observing and inventory of five traditional houses which possess significant architectural construction methods and ornamentations. Two architecture typologies of these houses which is the fanlight and railing, were selected and analyzed by comparing with that of the Peninsular Malaysia, in order to determine their similarities and differences. From the analysis, it is found that these Malay traditional houses portray relatively similar architectural typologies, but are slightly different in terms of the patterns for the railing and the minimal geometrical ornamentation of the fanlight. These findings will be used as the basis for the future developments on the research of Sarawak traditional Malay dwellings.

Figure 1: A traditional Malay dwelling in Kampung Bintawa Tengah showing a unique ornamented fanlight above the main windows

Figure 2: This house in Kampung Panglima Seman Lama possesses distinctive railing design which shows some resemblance to Sarawak's pua kumbu.

TRANSITION TO LOW CARBON ECONOMY THROUGH CARBON DIOXIDE EMISSION REDUCTION IN POWER GENERATION SECTOR IN MALAYSIA

Researchers: *Audrey Liwan, Mohd Khairul Hisyam bin Hassan, Jerome Kueh Swee Hui, Josephine Yau Tan Hwang and Rosita bt. Hamdan*

Faculty of Economics and Business, Universiti Malaysia Sarawak

The economy growth is always the attention focal point to all country. However, the economy growth impacts the protecting environment and vice-versa. The contradiction between the environment and the development of economy are getting more serious. The low carbon economy should be one of the future choice for sustainable development. This study attempts to examine the reduction of carbon dioxide (CO2) emission through different scenarios of economic growth and renewable energy mixed. There are three scenarios developed, namely Business-As-Usual (BAU), Ambitious 1 (AMB 1) and Ambitious 2 (AMB 2). Scenario analysis method and Long-range Energy Alternatives Planning System (LEAP) model were employed in this study. The results show AMB 1 was the most ideal scenario to strike the balance between economic development and environmental sustainability. It is recommended that power generation sector should opt for more renewable energy such as biomass, solar pv and small hydropower. In addition, integration between government agency, suppliers' and consumers' were needed to achieve Malaysia's commitment to reduce carbon emission.

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UNIVERSITI MALAYSIA SARAWAK
94300 KOTA SAMARAHAN, SARAWAK, MALAYSIA
TEL: +60 82 581 000 | FAX: +60 82 581 919